

BULK CARGO BAG

This invention relates to a bulk cargo bag, more particularly to a bulk cargo bag including an outer container body that has a quadrilateral base and a cylindrical surrounding wall, and a reinforcing member, which are combined to form a substantially rectangular shape when the bulk cargo bag is filled with a bulk cargo material.

A cylindrical bulk cargo bag tends to bulge out when it is full of a bulk cargo material, which results in the formation of a gap between two adjacent ones of the bulk cargo bags during storage or transport of a plurality of the bulk cargo bags. Therefore, a rectangular bulk cargo bag 10 has been developed.

Figs. 1 and 2 illustrate a conventional bulk cargo bag 10 including an outer container body 11 that has four sides 111 and a bottom 113, and four reinforcing belts 12, each of which is sewn to an inner surface 114 of the outer container body 11 through a pair of stitching lines 121. Stitching lines 112 are used to sew two adjacent ones of the four sides 111 to each other, and the bottom 113 to the four sides 111, so as to form a rectangular chamber in the outer container body 11. When the bulk cargo bag 10 is filled with a bulk cargo material (not shown), the bulk cargo material and the reinforcing belts 12 produce counteracting forces, and the reinforcing belts 12

prevent the four sides 111 from undergoing deformation. However, the four sides 111 are interconnected by sewing, which makes manufacture complicated and time-consuming.

5 Therefore, an object of the present invention is to provide a bulk cargo bag that can overcome the aforesaid drawback associated with the prior art.

 According to the present invention, a bulk cargo bag comprises: an outer container body including a
10 quadrilateral base having four sides and four corners, and a cylindrical surrounding wall formed as a single piece, the surrounding wall being sewn to the four sides of the base at a bottom end of the surrounding wall and extending from and cooperating with the base
15 to define a chamber in the outer container body; and a reinforcing member disposed within the chamber and sewn to an inner surface of the surrounding wall in a manner forming a plurality of individual compartments between the reinforcing member and the
20 surrounding wall. Each of the compartments corresponds to a respective one of the corners. The reinforcing member is formed with a plurality of through holes, which spatially communicate each of the compartments with the chamber.

25 Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiments of

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this invention, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a conventional bulk cargo bag;

5 Fig. 2 is a top view of the conventional bulk cargo bag;

Fig. 3 is an exploded perspective view of the first preferred embodiment of a bulk cargo bag according to this invention;

10 Fig. 4 is an assembled perspective view of the first preferred embodiment;

Fig. 5 is a sectional view taken along line V-V in Fig. 4;

15 Fig. 6 is a sectional view taken along line VI-VI in Fig. 4;

Fig. 7 is a sectional view of the first preferred embodiment, illustrating the first preferred embodiment in a state filled with a bulk cargo material;

20 Fig. 8 is an exploded perspective view of the second preferred embodiment of a bulk cargo bag according to this invention;

Fig. 9 is an assembled perspective view of the second preferred embodiment;

25 Fig. 10 is a sectional view taken along line X-X in Fig. 9;

Fig. 11 is a sectional view of the third preferred embodiment of a bulk cargo bag according to this

invention; and

Fig. 12 is a sectional view of the fourth preferred embodiment of a bulk cargo bag according to this invention.

5 Before the present invention is described in greater detail with reference to the accompanying preferred embodiments, it should be noted herein that like elements are denoted by the same reference numerals throughout the disclosure.

10 Figs. 3 to 6 illustrate the first preferred embodiment of a bulk cargo bag 20 according to this invention.

According to the present invention, the bulk cargo bag 20 of the first preferred embodiment
15 comprises: an outer container body 21 including a quadrilateral base 22, for example, a rectangular base, having four sides 23 and four corners 24, and a cylindrical surrounding wall 25 formed as a single piece, the surrounding wall 25 being sewn to the four
20 sides 23 of the base 22 at a bottom end of the surrounding wall 25 and extending from and cooperating with the base 22 to define a chamber 211 for receiving a bulk cargo material; and a reinforcing member 40 disposed within the chamber 211 and including a support wall
25 41 formed as a single piece and having open upper and lower ends 413, 414. The support wall 41 is formed with four groups of through holes 411 and is sewn to

an inner surface 212 of the surrounding wall 25 through four pairs of stitching lines 412 such that four individual compartments (C) are formed between the reinforcing member 40 and the surrounding wall 25 to correspond to the corners 24, and such that each of the four groups of the through holes 411 is confined between one of the pairs of the stitching lines 412 and spatially communicates a respective one of the four individual compartments (C) with the chamber 211.

With additional reference to Fig. 7, when a bulk cargo material (indicated by the small dots in Fig. 7) is filled into the chamber 211 of the outer container body 21, the bulk cargo material can flow from the chamber 211 into the compartments (C) through the through holes 411 so as to completely fill the bulk cargo bag 20. In addition, since the bulk cargo material and the reinforcing member 40 produce respectively outward expansion forces and inward forces that counteract the outward expansion forces, the cylindrical surrounding wall 25 of the bulk cargo bag 20 takes on a substantially rectangular shape for facilitating storage and transport of a plurality of the bulk cargo bags 20 after being filled with bulk cargo materials.

In this embodiment, a pair of handles 26 is sewn to the surrounding wall 25 of the outer container body 21 for handling the bulk cargo bag 20.

As shown in Figs. 8 to 10, the second preferred embodiment of the bulk cargo bag 20 according to the present invention has a structure similar to that of the first preferred embodiment. The second preferred
5 embodiment differs from the first embodiment in that the reinforcing member 40 includes four support strips 42. Each of the support strips 42 is formed with one of the groups of the through holes 411 and is sewn to the inner surface 212 of the surrounding wall 25
10 through one of the pairs of the stitching lines 412 to thereby form a respective one of the four compartments (C) between the support strip 42 and the surrounding wall 25.

As shown in Fig. 11, the third preferred
15 embodiment of the bulk cargo bag 20 according to the present invention has a structure similar to that of the first preferred embodiment. The third preferred embodiment differs from the first embodiment in that the bulk cargo bag 20 further includes an inner
20 container body 30 made of a waterproof material and interposed between the outer container body 21 and the reinforcing member 40. The inner container body 30 is formed as a bag having an open top end and a closed bottom end (not shown), and is sewn to the inner
25 surface 212 of the surrounding wall 25 together with the reinforcing member 40.

As shown in Fig. 12, the fourth preferred

embodiment of the bulk cargo bag 20 according to the present invention has a structure similar to that of the first preferred embodiment. The fourth preferred embodiment differs from the first embodiment in that
5 the bulk cargo bag 20 further includes a protective layer 711 disposed on an outer surface 213 of the surrounding wall 25 of the outer container body 21.

With the inclusion of the cylindrical surrounding wall 25 formed as a single piece, and the
10 combination of the quadrilateral base 22 and the reinforcing member 40, a substantially rectangular shape (i.e., a substantially right rectangular prism) is formed when the bulk cargo bag 20 is filled with a bulk cargo material, and hence, the aforesaid
15 drawback associated with the prior art can be eliminated.

CLAIMS:

1. A bulk cargo bag characterized by:

an outer container body including a quadrilateral base having four sides and four corners,
5 and a cylindrical surrounding wall formed as a single piece, said surrounding wall being sewn to said four sides of said base at a bottom end of said surrounding wall and extending from and cooperating with said base to define a chamber in said outer container body; and

10 a reinforcing member disposed within said chamber and sewn to an inner surface of said surrounding wall in a manner forming a plurality of individual compartments between said reinforcing member and said surrounding wall, each of said compartments
15 corresponding to a respective one of said corners, said reinforcing member being formed with a plurality of through holes which spatially communicate each of said compartments with said chamber.

2. The bulk cargo bag of Claim 1, characterized in
20 that said reinforcing member is sewn to said inner surface of said surrounding wall through a plurality of pairs of stitching lines, each pair of said stitching lines connecting said reinforcing member to said inner surface of said surrounding wall in a manner forming
25 one of said compartments between said reinforcing member and said surrounding wall, each pair of said stitching lines confining at least one of said through

holes in said reinforcing member.

3. The bulk cargo bag of Claim 2, characterized in that said reinforcing member includes a support wall formed as a single piece and having open upper and lower ends, said support wall of said reinforcing member being sewn to said inner surface of said surrounding wall through said plurality of pairs of said stitching lines.

4. The bulk cargo bag of Claim 2, characterized in that said reinforcing member includes four support strips, each of said support strips being sewn to said inner surface of said surrounding wall through one of the pairs of said stitching lines to thereby form one of said compartments between said reinforcing member and said surrounding wall, each of said support strips being formed with at least one of said through holes.

5. The bulk cargo bag of Claim 1, further characterized by an inner container body made of a waterproof material and interposed between said outer container body and said reinforcing member, said inner container body being sewn to said inner surface of said surrounding wall together with said reinforcing member.

6. The bulk cargo bag of Claim 5, characterized in that said inner container body is formed as a bag having an open top end and a closed bottom end.

7. The bulk cargo bag of Claim 1, further characterized

by a protective layer disposed on an outer surface of said surrounding wall of said outer container body.

8. The bulk cargo bag of Claim 1, further characterized by a handle sewn to said surrounding wall of said outer
5 container body.